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ABSTRACT

Although Mandarin Chinese is a topic-prominent language, it is shown that young children acquiring Chinese as their first language access the concept of grammatical subject as well as that of topic. A total of 95 children aged 2-5 years acquiring Mandarin Chinese as their first language were tested on sentences involving equi-constructions. It was hypothesized that if children were sensitive to the presence of a grammatical subject, they would distinguish topic and subject in the equi-constructions. The results confirmed that Chinese children distinguish the concepts of subject and topic and that they access the grammatical category of subject as well as the semantic category of topic. It is concluded that even for a highly topic oriented language like Chinese, children acquiring a first language have some sensitivity to formal grammatical concepts as well as semantic or pragmatic ones. (RW)

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Topic-Comment Structure and Grammatical Subject in First Language Acquisition of Mandarin Chinese: A Study of Equi-Constructions

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Chinese Structure

Chinese has been characterized as a "Topic-Prominent" language, in contrast to languages like English, which have been characterized as "Subject-Prominent" (c.f. Li & Thompson, 1976). Chinese, for example, makes productive use of sentences with both topics and distinct subjects (e.g., 1 and 2). For example, in 1, the topic "Nèi-kē shù", "that tree", is distinct from the subject "yèzi", "leaves".

1. Nèi-kē shù (ya), yèzi hěn dà, suǒyǐ wǒ hěn xǐhuān Ø.

   That-CL tree (Part.), leaf very big, so I very like Ø.
   (That tree, (its) leaves are very big, so I like (it).)

2. Huāpíng (ya), nǎinai dǎpò le Ø.

   Vase (Part.), Grandma break Asp. Ø
   (The vase, Grandma broke (it).)

Chinese also makes productive use of topic in sentences with semantic identity between the topic and the subject as with the sentence in 3. Here, topic and subject are structurely distinct but coreferential. For example, the topic "Nǎinai", "Grandma" and the subject "tā", "she" in 3, are structurally distinct, although they have the same referent.

3. Nǎinai (ya), tā dǎpò huāpíng le.

   Grandma (Part.), she break vase Asp.
   (Grandma, she broke the vase.)

Topic, as can be seen in sentences 1-3, is sentence initial and can be separated from the rest of the sentence by a pause or by a pause particle (e.g., "ya"). Topics generally set a semantic framework within which a main predication holds (Chafe, 1976, Li & Thompson, 1976). Topics are seldom repeated in a sentence, but, can be coreferential with gaps or pronouns. Subjects, on the other hand, are immediately related to the verb in the main predication, and control grammatical processes related to the verb. For example, in "Equi sentences", such as exemplified in 4, it is the subject but not the topic which controls for the Equi-gap (Ø) as the arrow shows in this example.

4. Xiǎo-gǒu, yǎnjīng xǐhuān Ø dòng-lái-dòng-qù.

   Puppy, eye like Ø move-around
   (The puppy, (its) eyes like to move around.)

In 4, the topic is the puppy and the subject is the eyes. It is the subject "eyes" which like to move around, not the topic "puppy".

However, the sentences in 5 exemplify an important issue which is critical in this paper. Namely, Chinese does not require structurally distinct topic and subject. Because of the unmarked SVO word order of Chinese (c.f. Huang, 1982, Lii, 1975), in many cases, the sentence initial topic overlaps with the grammatical subject.

5.a. Nǎinai dǎpò huāpíng le.
   Grandma break vase Asp.
   (Grandma broke the vase.)

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b. Nǎinai, Ø dǎpò huāpíng le.

Grandma, Ø break vase Asp.
(Grandma broke the vase.)

For example, in 5a, "Nǎinai" meaning "Grandma" can be analyzed as the grammatical subject of the predicate "dǎpò huāpíng le" meaning "broke the vase". Alternatively, "Nǎinai" can be analyzed as the sentence's topic and functions here to name what the sentence is about. As with other topics, the name "Nǎinai" in 5b can be separated from the rest of the sentence by a pause or by a pause particle. In this case, 5b, the topic and the null subject (Ø) are coreferential, in a way which is parallel to the coreferential relation between the topic and the subject pronoun in 3. Since the use of a pause or a pause particle to mark topics is optional in sentences like 5, the sentence initial noun phrase "Nǎinai" could represent either topic or subject.

Implications for First Language Acquisition

The issue we raise in 5 has important inplications for first language acquisition. In particular, it leads us to ask the central question of this paper. That is, do Chinese children, in early stages of first language acquisition access both the concepts of topic and grammatical subject. Since simple sentences such as in 5 can be analyzed as organized either around topic or subject, it is possible to argue that the young Chinese child could achieve early sentence organization on the basis of topic alone, without any access to the concept of grammatical subject. One can ask the same question about the sentences in 6, which are a few examples from the many we have collected from the natural speech of young children acquiring Mandarin Chinese as their first language.

6.a. Māma chuī qǐqiú dàda de. (1,7(15)) (year,month(day))
Mother blow balloon big-big Part.
(Mother blows a big balloon.)

b. Nèi tánglǎoyā dàng chūqiān. (2,2(4))
That Donald duck swing swing
(That Donald duck swings (on) the swing.)

In fact, there has been a good deal of recent research which has questioned whether childen acquiring English at early stages access the formal concept of grammatical subject (c.f. de Villiers, 1980, Marantz, 1982, Maratsos, 1980, 1981, Bowerman, 1973, 1982, Bloom, 1970). Some of these have suggested that young children access only more primitive semantically based concepts (c.f. de Villiers, 1980, Marantz, 1982, Maratsos, 1980, 1981, Bowerman, 1973). If this is true in a subject-oriented language like English, then, one would expect it to be even more true in a topic-oriented language like Chinese. Since topic has been argued to set a semantic framework for sentence interpretation, it might be expected to provide the basis for early sentence organization. For example, it has been argued that not only can topic provide a basic principle for general sentence organization, both for adults and children, but that topic may underlie the grammatical concept of subject (Gruber, 1967, Bates & MacWhinney, 1982, Bates, McNew, MacWhinney, Devescovi & Smith, 1982).

In this paper, we provide evidence, however, that young children acquiring Mandarin Chinese as their first language, access the concept of grammatical subject as well as that of topic, even though Chinese is a "Topic-prominent" language.

In the experimental study reported in this paper, we tested young Chinese children on sentences involving Equi constructions like those which we saw in 4. These Equi sentences require reference to grammatical subject, and subject and topic are distinguished in this structure. We hypothesized that if young children are sensitive to the presence of a grammatical subject, they should distinguish topic and subject in Equi constructions like 4. In particular, they should be sensitive to the obligatory control relationship between the subject and the equi-gap and use the subject, not the topic, to control the gaps in these sentences.

We knew from our previous research that Chinese children do use topic to control for gaps (Chien, 1983). For example, in 7a and 8a , which are coordinate sentences with redundancy, possible gaps can be controlled either by topic (as in 7) or by subject (as in 8). In these sentences, we have found that children reduce the redundant topic to create a gap almost as frequently as they reduce the redundant subject, as shown in 7b or 8b (25.74% of the errors are topic reductions as 7a→ b, and 29.63% of the errors are subject reductions as 8a→ b).

7.a. Bǎobao, jiǎo hěn xiǎo, bǎobao yě hěn kěài.
Baby, feet very small, baby also very cute
(The baby,(her) feet are very small, the baby, is also very cute.)

b. Bǎobao, jiǎo hěn xiǎo, Ø yě hěn kěài.
Baby, feet very small, Ø also very cute
(The baby, (her) feet are very small (and she is) also very cute.)

8.a. Shúshu, bízi hěn dà bízi yě hěn gāo.
Uncle, nose very big nose also very tall/long
(Uncle, (his) nose is very big (and his) nose is also very long.)

b. Shúshu, bízi hěn dà Ø yě hěn gāo.
Uncle, nose very big Ø also very tall/long
(Uncle, (his) nose is very big (and) also very long.)

Thus, if we can show that in Equi sentences Chinese children do not use topic to control the Equi gaps (although they do use topic to control the gap in coordinate sentences like 7), then, we will have evidence that children distinguish the structural differences across these sentence types, and that they can and do access the grammatical category subject when the structure requires it. It will also show that topic alone is not the overriding principle of sentence organization for children even in topic-prominent languages like Chinese.

Subjects

In this experimental study, we tested 95 children acquiring Mandarin Chinese as their first language in Taiwan from 2;6 (years, months) to 5;0 of age, with a mean age of 3;9. The subjects were divided into five age groups of six-month periods (n: G_1:15, G_2-G_5:20 each). All subjects had at least begun to combine words into simple sentences. These were the same children who had been tested in our previous study of coordinate sentences like those in 7 and 8.

Design

In the present study, we tested each child in an elicited imitation task on a set of sentences related to the Equi construction exemplified in Table 1. These sentences have topic or subject redundancy as indicated by the underlining. Sentences 9 and 10 on Table 1 have topic redundancy. Sentences 11 and 12 have subject redundancy. Forward reduction of topic (RT_2) in topic redundant sentences (i.e., TR sentences) like 9 and 10 would result in a gap controlled by topic as in 13 and 14 on the table. Forward reduction of subject (RS_2) in subject redundant sentences (i.e., SR sentences) like 11 and 12 would result in a gap controlled by subject as in 15 and 16 on the table. Reduction of topic as in 13 and 14 is grammatically ill-formed since it appears to reflect a gap now controlled by topic in Equi-subject positions as the arrows show. (Notice that the reduced forms in 13 and 14 are not ungrammatical in themselves, only in that by virtue of reduction of redundancy, they now reflect incorrect anaphoric control relations.) Reduction of subject as in 15 and 16, is grammatically well-formed, since it does leave a gap controlled by subject.

In this study, we measured the amount of spontaneous reduction of redundancy in children's imitation of both sentence types, topic redundant sentences as in 9 and 10 and subject redundant sentences as in 11 and 12. We tested whether there would be significantly more reduction of the redundant subject than that of redundant topic. There are three sentences in each type with varied lexical content and a score range of 0-3. All test sentences are 11 syllables in length.

Hypotheses

We hypothesized that Chinese children would significantly restrict forward reduction of topic redundancy in these Equi-type sentences which require an obligatory control relation between the subject and the equi-gap, even though the same children had frequently reduced the redundant topic in coordinate sentences as we repoted in 7, and even though as we saw above in 1-3, topic control of gaps is very productive in Chinese. That is, we hypothesized that Chinese children would restrict reduction of the redundant topic in a forward direction in imitation of 9 and 10. That is, they would not give 13 and 14. We hypothesized that they would significantly more often reduce subject redundancy in 11 and 12. That is, they would give imitations like 15 and 16.

Control Sentences

Notice that it could be argued that children could block the reduction of redundancy in 9 and 10 solely on semantic grounds. Reduction of sentences 9 and 10 to 13 and 14 results in meaning changes, while reduction of 11 and 12 to 15 and 16 does not result in any meaning change. Although one could argue that children are sensitive only to this difference, it is important to note that children could not determine this meaning change without knowledge of the obligatory control of gaps by subject in Equi sentences.

In order to test this semantic factor more precisely and to test its possible interaction with grammatically determined control relations, we also tested children on an additional set of sentences, as exemplified in 17 on Table 1. The sentence in 17 is structurally equivalent to the sentences in 9 and 10. However, in 17, semantically, the predicate can only non-anomalously refer to the topic. In sentence 17, the predicate

TABLE 1

Sample Sentences: Equi-Related Constructions Used in Elicited Imitation Task (9-12, 17) and Possible Imitation Responses which Reduce Redundancy (13-16, 18)

Topic Redundant Sentences

9. Xiǎohuá, Jiějie xǐhuān Xiǎohuá dài màozi.
Xiaohua, older sister like Xiaohua wear hat.
(Xiaohua, (her) older sister like Xiaohua to wear a hat.)

10. Jiā-li, lǎogōnggōng xǐhuān jiā-li rènao.
Home, grandfather like home lively
(Home, grandfather likes (his) home (to be) lively.)

Subject Redundant Sentences

11. Xiǎohuá, bàba xǐhuān bàba kàn diànshi.
Xiaohua, father like father watch TV.
(Xiaohua, (her) father like (her) father to watch TV.)

12. Jiā-li, māma xǐhuān māma hěn hǎo-kàn.
Home, mother like mother very pretty
(Home, mother likes (for) mother (to be) very pretty.)

Possible Forward Reduction

*13. Xiǎohuá, Jiějie xǐhuān Ø dài màozi.
Xiaohua, older sister like Ø wear hat.
(Xiaohua, (her) older sister likes to wear a hat.)

*14. Jiā-li, lǎogōnggōng xǐhuān Ø rènao.
Home, grandfather like Ø lively
(Home, grandfather likes (to be) lively.)

Possible Forward reduction

15. Xiǎohuá, bàba xǐhuān Ø kàn diànshi.
Xiaohua, father like Ø watch TV.
(Xiaohua, (her) father likes to watch TV.)

16. Jiā-li, māma xǐhuān Ø hěn hǎo-kàn.
Home, mother like Ø very pretty
(Home, mother likes (to be) very pretty.)

Control sentence

17. Zuǐbā, gēge xǐhuān zuǐbā zhāng hěn dà.
Mouth, older brother like mouth open very big
(Mouth, older brother like (his) mouth (to be) open very wide.)

Possible Forward Reduction

*18. Zuǐbā, gēge xǐhuān Ø zhāng hěn dà.
Mouth, older brother like Ø open very big
(Mouth, older brother like (it) (to be) open very wide.)

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*: Ungrammatical anaphoric control relation

"zhāng hěn dà" "open very wide" can only semantically refer to the topic "mouth" not to the subject "older brother". However, if forward reduction of the topic were to occur, this reading would be grammatically blocked. If children block topic reduction in sentence 17 (so as not to give sentence 18) as often as they block reduction in sentences 9 and 10, then we have strong evidence that this blocking is due to children's sensitivity to the unique structure of the Equi-type construction, which to a degree is independent of the semantic relations involved.

Results

In this study we examine children's spontaneous reduction of redundancy. A sentence was considered as reduction only if the only difference between the stimulus sentence and the response was the reduction of one of the redundant elements.

In general, reduction of redundant subject (S_1 or S_2) or topic (T_1 or T_2) accounts for a large number of errors (42%) made by children in this study. Any structural or meaning change which occurred in imitation of the stimulus sentences was counted as an error in this study.

Figure 1 shows that, as hypothesized, reduction of redundancy is structurally constrained. Children made significantly more forward subject reductions (RS_2) than forward topic reductions (RT_2) ($F(1,90)=32.61$, $p=.0000$). Figure 1 also shows that children significantly block forward topic reduction. That is, in about 15% of the sentences with redundant subject, children do reduce the subject of the Equi-complement to give a gapped Equi sentence. However, they only rarely reduce the redundant topic which follows the Equi-verb, (less than 4%) as the figure shows.

As Figure 2 shows, children consistently block the reduction of redundant topic in the Equi-construction (3.36%) at the same time that they frequently reduce the redundant topic in the coordinate construction (25.74%).

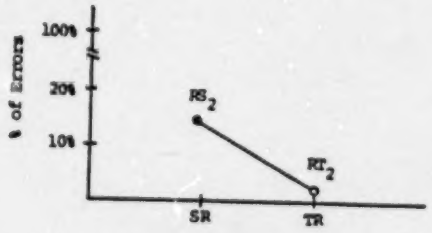

Figure 1: Forward Reduction of Topic or Subject in the Topic Redundant and the Subject Redundant Sentences

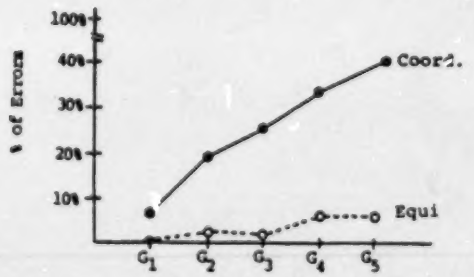

Figure 2: Forward Reduction of Topic in Equi-type Constructions and in Coordinate Constructions

Figure 3 shows the developmental comparison of children's forward reduction of the redundant subject or topic in the Equi-type sentence. As this figure shows, forward subject reduction is consistently higher than forward topic reduction from the first to the fifth group. Children in the first group do not evidence much of either type of redundancy reduction (subject or topic). However, if they do reduce a constituent, they reduce the redundant subject but not the redundant subject but not the redundant topic.

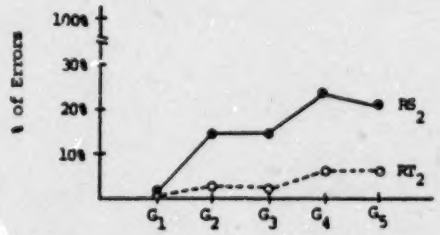

Figure 3: Developmental Comparison of Children's Forward Reduction of Topic or Subject

Figure 4 shows the comparison between sentence initial topic reduction (RT_1) and forward topic reduction (RT_2). An example of the reduction of the sentence initial topic is shown in sentence 19.

19.a. Xiǎohuá, jiějie xǐhuān Xiǎohuá dài màozi.
Xiaohua, older sister like Xiaohua wear hat.
(Xiaohua, (her) older sister likes Xiaohua to wear a hat.)

b. Ø, jiějie xǐhuān Xiǎohuá dài màozi.
Ø, older sister like Xiaohua wear hat
(Older sister likes Xiaohua to wear a hat.)

Data in Figure 4 shows that children are sensitive to the pragmatic constraint that topic usually should not be mentioned more than once. However, because children are also sensitive to the constraint that subjects obligatorily control the Equi-gap, they consistently more often reduce the sentence initial topic (RT_1=48.52% of errors), not the topic after the Equi-verb (RT_2=3.35% of errors).

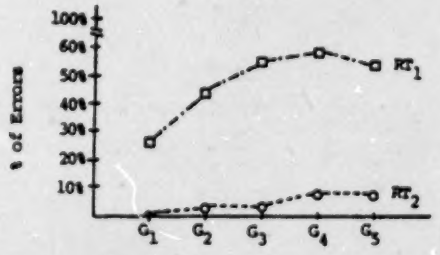

Figure 4 : Developmental Comparison of Children's Sentence Initial Topic Reduction (RT_1) and their Forward Topic Reduction (RT_2) (The Experimental Sentences)

Figure 5 shows the amount of sentence initial topic reduction and forward topic reduction on imitation of the control sentences which had a semantic bias toward using topic to interpret the Equi-complement

(RT_1=49.31%, RT_2=3.52%). As can be seen from Figure 5 compared to Figure 4, children block forward reduction of the redundant topic so as not to give a topic-controlled equi-gap in these control sentences as frequently as they block it in the experimental sentences with no semantic bias (RT_2: Exp.=3.35%, Con.=3.52%). As hypothesized then, Chinese children's blocking of topic reduction and their sensitivity to the subject control of the Equi-gap must be determined by the structural rather than the semantic factors involved.

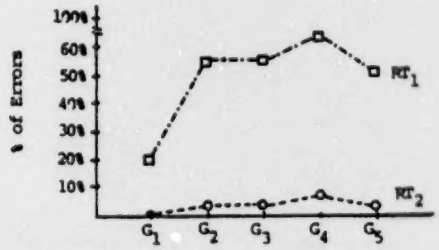

Figure 5 : Developmental Comparison of Children's Sentence Initial Topic Reduction (RT_1) and their Forward Topic Reduction (RT_2) (The Control Sentences)

Conclusion

In conclusion, our results confirm that Chinese children distinguish the concepts of topic and subject, and that they do access the grammatical category of subject as well as the pragmatic or semantic category of topic. It is the grammatical subject which must be accessed in Equi-NP interpretation. In our study, children were given two options for creating a gap after an Equi-verb just as they had been in our previous study with coordinate sentences. One possible gap would result from forward topic reduction. Another possible gap would result from forward subject reduction. In clear contrast to their responses to the coordinate sentences, children in this study with Equi sentences consistently block the option of topic reduction and mainly take the option of subject reduction. Since only subject reduction leaves a gap with a correct anaphoric control relation in the Equi-construction, this provides clear evidence that Chinese children access the concept of grammatical subject when the structure requires it.

Also, the fact that children continue to block forward topic reduction regardless of the semantic relations involved in the predicate complement confirms that children do consult the structure of the Equi-construction, which to a degree must be independent of the semantic relations involved.

Finally, children were found to restrict the forward reduction of topic in this Equi-construction, at the same time that they reduced the sentence initial topic. This shows that the children are aware of the general pragmatic constraint against redundant topic in Chinese. However, this fact also shows that the grammatical constraint on subject regarding the obligatory control relation between the subject and the Equi-gap, must be independent of the pragmatic constraint on topic.

The general implication of this study is that even for highly topic-oriented languages like Chinese, it is necessary to attribute to young children in first language acquisition, some sensitivity to formal grammatical concepts as well as semantic or pragmatic ones.

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